REMARKS

Claims 1-7 have been examined. New claims 8-19 have been added to more fully describe the patentable aspects of the invention.

I.   Claim Rejections under 35 U.S.C. § 102

Claims 1 and 3 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Chen et al. (US Pub. No. 2002/0081032). Applicant traverses this rejection.

A.   Claim 1

Claim 1 recites, "a detection step of detecting, in the image, eye portions which have undergone a predetermined color change, based on the image data", which the Examiner asserts is disclosed by Chen. Applicant respectfully disagrees. Chen discloses detecting a human face by detecting a pair of dark areas which are expected to be human eyes in an image (paragraph 26). In particular, Chen discloses a reading means, which reads an original image 300 and acquires a gray level of each pixel of the original image 300, and an eye detecting device 218, which detects eye areas from eye candidate regions generated based on the average gray levels of pixels in determined valley regions of the image (paragraphs 109, 113-116 and 122). That is, areas corresponding to human eyes are detected by merging valley regions in adjacent columns of the image to generate eye candidate regions, in which a valley region is an interval within a column which has a gray level less than both of its adjacent intervals' gray level (paragraph 116 and 122). Therefore, Chen merely discloses converting an *original image* into gray levels and detecting low (i.e., valley) gray levels through *spatial variation* in order to generate eye candidate regions. Chen, however, does not disclose detecting eye portions which have *undergone a predetermined color change*, as required by claim 1. In other words, Chen

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merely converts an original image into gray levels by comparing an interval with its adjacent intervals but fails to disclose detecting any portion of the image which has undergone a predetermined color change, having an *absolute pixel value*, due to conditions during the image pickup process.

Accordingly, Chen fails to anticipate under 35 U.S.C. § 102 because it does not disclose each and every element of claim 1. Applicant submits that claim 1 is patentable for at least this reason.

B. Claim 3

Since claim 3 contains features which are similar to those in claim 1, claim 3 should be patentable for reasons analogous to those presented above in conjunction with claim 1.

II. Claim Rejections under 35 U.S.C. § 103

Claims 2 and 4-7 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Wang (US 6,278,491). Applicant traverses this rejection.

A. Claim 2

Claim 2 recites that the detection step of claim 1 "detects red-eye portions in the image", which the Examiner concedes is not taught by Chen. The Examiner cites to Wang in order to correct the deficiency of Chen and asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Chen with the teaching of Wang because red-eye correction is well known in the art. Applicant respectfully disagrees. Wang teaches face detection in which a face is detected by a face detector 21 and then the image portion of the image 11 that contains the detected face is sent to an eye detector 22 to detect an eye area and whether the detected eye contains a red pupil (col. 4, lines 24-43). Therefore, Wang merely teaches that red-eye is detected and corrected <u>after</u> a face is detected. Thus, although it

appears Wang teaches red-eye detection and correction, Wang fails to teach or suggest detecting red-eye portions and recognizing face portions in the image based on the detected red-eye portions, as required by claim 2 in view of claim 1. That is, Wang does not teach or suggest using red-eye detection for recognizing or detecting face portions.

In addition, a person of ordinary skill in the art would not modify the invention of Chen with the teachings of Wang, as asserted by the Examiner. In view of arguments made above in conjunction with claim 1, Chen merely teaches converting an original image into gray levels and detecting low (i.e., valley) gray levels through spatial variation in order to generate eye candidate regions. The gray level detection method of Chen, however, is not suitable for red-eye detection. Red-eye portions may affect the gray scaling of Chen, and thus, may affect the accuracy of the eye area detection of Chen. That is, when a red-eye portion of the original image is converted to a gray level in Chen, the gray level equivalent may not be detected as a valley region, but instead as an intermediate or peak region (see Chen, paragraph 122). This is because a red pupil may be converted to a different gray level than a black pupil. Therefore, when red-eye occurs in an image, the eye areas may not be detected due to the gray level conversion and unrecognized valley regions (see also, "threshold values", paragraph 137-171). Thus, a person of ordinary skill in the art would not look to Wang to modify the teachings of Chen.

Moreover, the Examiner asserts on page 6 of the Office Action that Chen discloses that the manner of eye area detection <u>for determining the sub-image</u> (i.e., the human face) is not limited to the method described therein, and other methods and/or processes, as those known in the art, can be utilized <u>for determining the sub-image</u>. However, neither Chen nor Wang teach or suggest using red-eye detection for recognizing face portions in the image. As stated above, the Examiner concedes that Chen does not teach red-eye detection. Also, Wang teaches that red-eye

is detected after a face is detected, and thus, does not teach red-eye detection for determining a sub-image. Therefore, the Examiner provides no basis to support that it is a known method in the art to use red-eye detection for determining a sub-image.

In view of the above, claim 2 should be patentable for at least these reasons.

B.   Claim 4

Claim 4 recites "a detection step of detecting, in the image, eye portions which have undergone a predetermined color change, based on the image data" and "a recognition step of recognizing face portions in the photographic image based on the eye portions detected in the detection step", which the Examiner asserts is taught by Chen. Applicant respectfully disagrees for reasons analogous to those presented above in conjunction with claim 1.

Furthermore, in view of the arguments presented above in conjunction with claim 2, Wang does not teach or suggest using a detected eye portion, having undergone a predetermined color change, for recognizing face portions. Therefore, a person of ordinary skill in the art would not modify the invention of Chen with the teachings of Wang, as asserted by the examiner.

Applicant submits that claim 4 is patentable for at least these reasons.

C.   Claim 5

Claim 5 recites "a detection step of detecting red-eye portions in the image, based on the image data" and "a recognition step of recognizing face portions in the image based on the red-eye portions detected in the detection step". Applicant respectfully disagrees for reasons analogous to those presented above in conjunction with claim 2.

D. Claim 6

Since claim 6 contains features similar to features of claim 4, Applicant submits that claim 6 is patentable for reasons analogous to those presented above in conjunction with claim 4.

E. Claim 7

Since claim 7 contains features similar to features of claim 2, Applicant submits that claim 7 is patentable for reasons analogous to those presented above in conjunction with claim 2.

III. New claims

By this Amendment, Applicant has added new claims 8-19 to further define the claimed invention. Applicant respectfully submits claims 8-19 recite additional features which are not taught or suggested by the prior art of record.

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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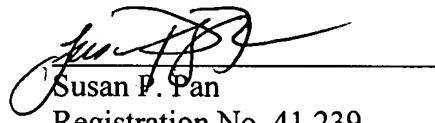
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